



Date:

Technical Standard Order

PROPOSED

Subject: TSO-C141, AIRCRAFT FLUORESCENT LIGHTING BALLAST/FIXTURE EQUIPMENT

- 1. PURPOSE.** This technical standard order (TSO) prescribes the minimum performance standard that fluorescent lighting ballast/fixture equipment must meet in order to be identified with applicable TSO marking.
- 2. APPLICABILITY.** The standards of this TSO apply to ballast/fixtures intended to be used in aircraft cabin fluorescent lighting systems. Design/construction features are incorporated which will allow this equipment to be operated without the hazards of smoke, fire, and electromagnetic interference.
- 3. REQUIREMENTS.** Equipment that is to be so identified with the applicable TSO marking must meet the standards set forth in the Society of Automotive Engineers, Inc. (SAE), Aerospace Standard (AS) 4914, "Aircraft Fluorescent Lighting Ballast/Fixture Safety Design Standard," dated November 1994.
 - a. Failure Condition Classification.** Failure of the intended function defined in paragraphs 1(a) and 1(b) of this TSO has been determined to be a major failure condition. The applicant must develop ballast/fixtures to at least the design assurance level commensurate with this failure condition classification.
 - b. Environmental Qualification.** The applicable environmental test procedures specified in RTCA, Inc. (RTCA) Document No. DO-160C, "Environmental Conditions and Test Procedures for Airborne Equipment," Change 3, dated May 1993.
- 4. MARKING.** Each aircraft fluorescent lighting ballast/fixture must be marked in accordance with 14 CFR 21.607(d).
- 5. DATA REQUIREMENTS.**
 - a. Data to be provided with the application** In accordance with 14 CFR 21.605 (a), the manufacturer must furnish the Manager, Aircraft Certification Office (ACO), Federal Aviation Administration (FAA), having purview of the manufacturer's facilities, one copy of the following technical data to support the FAA design and production approval:

(1) Operating instructions and equipment limitations. The limitations shall be sufficient to describe the operational capability of the equipment.

(2) Installation procedures and limitations. The limitations shall be sufficient to ensure that the appliance, when installed in accordance with the installation procedures, continues to meet the requirements of this TSO. The limitations shall include at least the following.

(a) A note with the following statement: “The conditions and tests required for this TSO approval of this article are minimum performance standards. It is the responsibility of those desiring to install this article in a specific class of aircraft to determine that the aircraft installation conditions are within the TSO standards. The article may be installed only if further evaluation by the applicant documents an acceptable installation and is approved by the Administrator.”

(b) When applicable, identification that the appliance is an incomplete or multi-use system. This must describe the functions that are intended to be provided by the appliance.

(3) Schematic drawings as applicable to the installation procedures.

(4) Wiring diagrams as applicable to the installation procedures.

(5) Specifications.

(6) List of components by part number.

(7) Instructions for periodic maintenance and calibration which are necessary for continued airworthiness once the equipment is installed.

(8) An environmental qualification form as described in RTCA/DO-160C, Change 3, for each system component.

(9) Manufacturer’s TSO qualification test report.

(10) Nameplate drawing.

(11) A drawing list, enumerating all of the drawings and processes that are necessary to define the article’s design.

b. Data that must be available upon request. In addition to those data requirements that are to be furnished directly to the FAA, each manufacturer must have available for review by the manager of the ACO having purview of the manufacturer’s facilities, the following technical data:

(1) The functional qualification specifications to be used to qualify each production article to ensure compliance with this TSO.

(2) Equipment calibration procedures.

(3) Corrective maintenance procedures (within 12 months after TSO authorization).

(4) Schematic drawings.

(5) Wiring diagrams.

(6) The results of the environmental qualification tests conducted in accordance with RTCA/DO-160C, Change 3.

c. Data to be furnished with Manufactured Units. One copy of the data and information specified in paragraphs 3(a)(1) through (8).

6. AVAILABILITY OF REFERENCE DOCUMENTS.

a. Copies of SAE AS 4917 may be purchased from: Society of Automotive Engineers Inc., Department 331, 400 Commonwealth Drive, Warrendale, Pennsylvania 15096.

b. Copies of RTCA Document No. DO-160C and revisions may be purchased from: RTCA Inc., 1140 Connecticut Avenue, N.W., Suite 1020, Washington, D.C. 20036-4001.

c. Federal Aviation Regulations Part 21, Subpart O, may be purchased from Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325.

d. Advisory Circular 20-110 (current revision), "Index of Aviation Technical Standard Orders," may be obtained from: U.S. Department of Transportation, Subsequent Distribution Office, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785.

John K. McGrath
Manager, Aircraft Engineering Division
Aircraft Certification Service

